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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/638,245	08/14/2000	Christopher M. Hanna	56233-139(THAT-3DVCN0	1379
23630 7590 07/11/2008 MCDERMOTT WILL & EMERY LLP 28 STATE STREET BOSTON, MA 02109-1775			EXAMINER LEE, PING	
			ART UNIT 2615	PAPER NUMBER
			MAIL DATE 07/11/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

09/638,245

**Applicant(s)**

HANNA, CHRISTOPHER M.

**Examiner**

Ping Lee

**Art Unit**

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-9 and 49-120 is/are pending in the application.  
4a) Of the above claim(s) 7-9, 49-59 and 94-103 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 60-93, 104-120 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/C2)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Oath/Declaration***

***Response to Amendment***

1. The declaration under 37 CFR 1.132 filed 4/7/08 is insufficient to overcome the rejection of claims based upon applicant admitted prior art as shown in Fig. 1 in view of Holt as set forth in the last Office action (the declaration does not clearly states which ground of rejection it is referring to; examiner assumed that it is intended to overcome the 103 rejection based upon applicant admitted prior art as shown in Fig. 1 in view of Holt) because:

- a. It is unclear which pending claims are related to this declaration.
- b. Under #6, "the products" have been stated. It is unclear what "the products" are and how each of "the products" related to the claimed subject matter and the rejection(s).
- c. There is no factual evidence to show that "the products" incorporate the claimed subject matter, and based on which specific claim(s).
- d. The declaration fails to show what considered as "a higher performance version of the previously analog-only solution", what is being specifically requested by the customer and how does it relates to the claimed invention and the rejection.
- e. Under #6, it states "the impetus for developing the technology". It is unclear how the mentioned technology related to the claimed subject matter and the rejection(s).

- f. Under #6, it states "the impetus for developing the technology came from THAT's customers, who has been frustrated over the drift and limited performance of the analog solutions". What does this statement mean? How would this statement relate to the rejection and the claimed subject matter? Why this information should be considered as a long-felt need?
- g. Under #7, "the prototypes" have been stated. It is unclear how "the prototypes" relate to the claimed subject matter and to rejection(s).
- h. It is unclear what the "Technology" is and how the "Technology" relate to the claim(s) and the rejection(s).
- i. Under #8, it states that "many tens of thousands of broadcast-quality BTCS encoders" have been manufactured and sold, "at least five different customers purchasing the products on regular basis" and "the company's customers have sold many more tens of thousands of units incorporating the Technology". How do these statements relate to the rejection and the claimed subject matter? Why this information should be considered as commercial success?
- j. Under #9, it states that "since 1994, THAT Corporation has been involved in licensing BTSC Technology", "more than 10 major licensees who use the Technology to implement millions of BTSC products each year", many companies have been identified, and "the company's licensees are responsible for literally millions of BTSC implementations per month". How does this

information relate to the rejection and the claimed subject matter? why this information should be consider as commercial success?

k. Under #10, it states "THAT has applied for approximately 20 United States and 76 foreign patent applications related to TV audio technology in the past ten years". What does this statement mean? How does it relate to the claimed subject matter and the rejection?

l. Under #10, it states "a complete suite of Verilog code". There is no evidence that this code relates to the claimed subject matter.

m. Under #10, it states "prominent IC makers license for many tens, often hundreds of thousands of dollars in start-up fees, plus a promise to pay royalties for each instance of our Technology which they manufacture and sell". Why this statement should be considered as commercial success?

n. Under #10, it states "IC companies would not do so if it were easy to create this technology". What does this statement mean?

o. It refer(s) only to the system described in the above referenced application and not to the individual claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

p. It states that the claimed subject matter solved a problem that was long standing in the art. However, there is no showing that others of ordinary skill in the art were working on the problem and if so, for how long. In addition, there is no evidence that if persons skilled in the art who were presumably working on the

problem knew of the teachings of the above cited references, they would still be unable to solve the problem. See MPEP § 716.04.

2. In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 90 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 90 states that "the digital matrix unit, the difference channel processing unit, and the sum channel processing unit are included on a single integrated circuit". In the response filed on 4/27/08, on p. 24, applicant admitted that a digital BTSC employing the claimed subject matter of the present application requires two DSPs. Therefore, applicant fails to provide an enablement for the claimed limitation in claim 90.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 60-77, 83-84, 86-89, 91, 109, 110, 112-115 and 119 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art as illustrated in Fig. 1 in view of Holt et al (hereafter Holt) (US 4,803,727).

Regarding claim 87, the prior art as shown in Fig. 1 illustrated a stereophonic encoder to transmit left and right stereophonic signals by separately processing a sum signal in a L+R path and a difference signal in a L-R path. Although not explicitly shown in Fig. 1, one skilled in the art would have expected that the encoded sum signal and the difference signal could be reconstructed at the decoder at the receiving end to yield a left signal and a right signal, or a monophonic signal. The prior art as illustrated in Fig. 1 was implemented using analog circuitry in accordance with the standard defined by BTSC. However, Fig. 1 fails to show how to implement the encoder by using digital circuitry.

Holt teaches a similar encoder also including a L+R path and a L-R path to transmit L and R stereophonic signal to a receiver having a decoder (to reconstruct) to obtain left and right signals (applied to the left and right speakers). Furthermore, Holt teaches that any difference in phase during transmitting between these two paths will result in loss of stereophonic information (col. 1, lines 33-35). To prevent a mismatch, Holt proposes inserting delay equalization in the paths and to use digital processing for effecting overall processing and delay to avoid the difficulties of matching delays using

analog processors. Holt teaches that it is easy to design digital filters providing the precise delay control without corrupting the signals (col. 3, lines 28-41). Accordingly, one of ordinary skill in the art at the time of the invention was made, with prior art as shown in Fig. 1 and Holt before him/her, would have been motivated to ensure that the signals in L+R and L-R paths are matched, so the stereo relationship between the left and right signals are maintained at the receiver end. Moreover, one of ordinary skill in the art at the time of the invention was made, with prior art as shown in Fig. 1 and Holt before him/her, would have been motivated to embody the analog filters in applicant admitted prior as shown in Fig. 1 using digital technology, which allows a designer greater ability to equalize the delays between multiple paths.

Regarding claims 60-72, 76-77, 82-84, 86, 88, 89, 91, 109, 112-114, 119, Holt teaches that the left and right signals forming the sum and difference first, and then convert to digital signals (by 11, 12). So the digital sum and digital difference signals are used for transmission of the stereophonic source signal. With a digital stereophonic input source, the input could be directly applied to the digital matrix without any A/D converters. With analog stereophonic input source, one skilled in the art could utilize any well-known ADC to convert the analog signals (L and R) to digital signals to be applied to the digital matrix to obtain the digital sum signal and the digital difference signal. So the signals (sum and difference signals), used for transmission stereophonic sound source, after the digital matrix are the same as Holt. Thus, it would have been obvious to one of ordinary skill in the art to modify prior art as illustrated in Fig. 1 and Holt by converting the analog source signals (L and R) to digital formats, so that the



matrix could be implemented by digital circuitry. The claimed 75  $\mu$ s preemphasis is inherently included according to BTSC standard. The claimed "digital signal processor" could be interpreted as a circuit for processing digital signal.

Regarding claims 73, 92, 93 and 115, the prior art as shown in Fig. 1 fails to show a digital modulator unit. Examiner takes Official Notice that a digital modulator is notoriously well known in the art. Of course, in accordance with BTSC, the carrier frequency for the difference signal has to be set at 31 kHz. Thus, one of ordinary skill in the art would be motivated to using a well known digital modulator for modulating the digital sum and digital difference signal in order to combine these signals into a single transmitting signal.

Regarding claims 62, 66, 71 and 75, the claimed "preselected sample rate" is inherently included in a digital signal.

7. Claims 78-81, 85, 104, 105-108, 111, 116-118 and 120 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art as shown in Fig. 1 in view of Holt as applied to claim 82 above, and further in view of Walker et al (hereafter Walker) (US 4,809,274).

Regarding claims 78, 80, 85, 104, 105-108, 111, 116-118 and 120 as indicated above, the prior art as shown in Fig. 1 uses analog device for encoding the sum and difference signals, so the compression is also performed by analog device. Both the prior art as shown in Fig. 1 and Holt fail to show an adaptive weighting system. Walker teaches a digital compander transmitting digital audio signal (col. 1, line 17). Walker

Art Unit: 2615

suggests an adaptive weighting system to correct errors included by the compression and expansion processes (col. 1, lines 56-58). Accordingly, one of ordinary skill in the art at the time of the invention was made, with all three references before him/her, would have been motivated to use an adaptive weighting system for performing the compression as required by BTSC in order to transmit the stereophonic source to the receiver without incurring error.

Since the stereophonic source is intended to be broadcast as a TV signal in accordance with BTSC, the digital output signal from L-R path and the digital output signal from L+R path could be converted to analog format, so they would be modulated by the carrier in accordance with BTSC; or the digital output signal from L-R path and the digital output signal from L+R path could be modulated by the carrier and then converted to analog signal to be transmitted as a TV broadcast signal. One skilled in the art would be motivated to design the encoder using either method since they produce similar TV broadcast signal.

Regarding claims 79, 81, the claimed 75  $\mu$ s preemphasis is inherently included according to BTSC standard.

### ***Response to Arguments***

8. Applicant's arguments filed 4/27/08 have been fully considered but they are not persuasive.
9. Applicant stated that, on p. 25, "a DSP could not be reasonably and successfully employed to replay the type of complex analog functions required by an analog BTSC

encoder". However, the rejections, for example for claim 86, do not state that a DSP is being implemented. Therefore, it is irrelevant to the rejection. Furthermore, a DSP could be broadly interpreted as a circuit for processing at least one digital signal.

10. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (e.g., "s-plane", "z-plane" and warping as discussed on p. 25) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

11. From p. 31+, applicant went into great details on why the prior art as shown in Fig. 1 cannot be combined with Holt. This is not persuasive. When considering whether the invention is being obvious in view of two references, the references do not have to be physically combinable. However, the teachings of the prior art are what are at issue when determining obviousness between two references. In *re Keller*, 208 USPQ 871 (C.C.P.A. 1981). Combining the teachings of references does not involve an ability to combine their specific structures. In *re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973). Holt discussed that the phase distortion would present to the difference signal in an analog transmission system. Analog circuits are being added to compensate this distortion in order to match the sum signal and the difference signal. However, it is difficult to use analog circuits to provide the accurate compensation. Col. 1, lines 21-37. Applicant discussed in the background, on lines 5-10 of p. 9 of the specification, that it is difficult to obtain a precise result from an analog circuit formed by

analog components over a period of time. So both applicant and Holt have to deal with the problems caused by analog circuitry when transmitting stereophonic signal by using a sum signal and a difference signal. Holt as a whole teaches the benefit of digital circuit to provide precise control without adding any distortion (col. 3, lines 29-41), so the sum and difference signals are matched at the receiver end and the stereophonic information will not be lost. Applicant's admitted prior art as shown in Fig. 1 also requires the sum signal and the difference signal to be matched at the receiver, so the decoded signals (L and R) will be the faithful version of the left and rights from the transmitter. Therefore, at the time of the invention as made, with admitted prior art as shown in Fig. 1 and Holt in front of him/her, one skilled in the art would have been motivated to modify the admitted prior art as shown in Fig. 1 by using digital circuit to replace the analog circuit in order to obtain a more reliable and accurate signal transmission.

12. In response to applicant's arguments against the references individually (e.g. on p. 35, applicant states that the bandlimiting filter applied to Holt does not applied to BTSC; on p. 37, reducing the bandwidth of the L-R signal in Holt), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The specification as disclosed discloses substantial amount of information on how to convert the analog encoder to digital encoder. However, the claims fail to bring those detail.

The claims are examined in light of the specification, but the limitations from the specification are not read into the claims.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522.

The examiner can normally be reached on Monday, Wednesday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ping Lee/  
Primary Examiner, Art Unit 2615

pwl